

### Patent Claims

1. Rotary friction welding machine for joining or connecting components, with a first rotating spindle (14) and a second non-rotating spindle (15), wherein a first component (11) of the components being connected to one another is positioned on the first spindle (14) and a second component (12) of the components being connected to one another is positioned on the second spindle (15),  
characterized by  
several flywheel mass bodies that are positioned on the rotary friction welding machine, wherein the flywheel mass bodies cooperate with the first rotating spindle (14) such that at least one of these flywheel mass bodies can, as needed, be brought out of operating engagement or into operating engagement with the first rotating spindle (14), and wherein the flywheel mass bodies that are in operating engagement with the first rotating spindle (14) and the flywheel mass bodies that are out of operating engagement with said first rotating spindle are positioned on the rotary friction welding machine.
2. Rotary friction welding machine according to Claim 1,  
characterized in that  
the several flywheel mass bodies (27, 28, 29, 30, 31, 32, 34, 35) are allocated to the first rotating spindle (14) such that said flywheel mass bodies when in operating engagement with the first spindle (14) rotate jointly with said spindle and when out of operating engagement with the first spindle (14) are stationary as compared with said spindle.
3. Rotary friction welding machine according to Claim 2,  
characterized in that  
at least one of the flywheel mass bodies (34) is rigidly connected to the first rotating spindle (14), while the or every other flywheel mass body (35) is rotatably mounted on said spindle in such a way that the or every flywheel mass body that is rotatably mounted on the first spindle can be selectively coupled to and uncoupled from the or every flywheel mass body that is rigidly connected to the first spindle.

4. Rotary friction welding machine according to Claim 1, characterized in that  
the several flywheel mass bodies (40, 41, 42, 43, 44) are allocated to a flywheel mass shaft (45), wherein the flywheel mass shaft (45) is coupled to the first rotating spindle (14) via a transmission gear (46).
5. Rotary friction welding machine according to Claim 4, characterized in that  
the flywheel mass bodies (40, 41, 42, 43, 44) in operating engagement with the first spindle (14) rotate jointly with the flywheel mass shaft (45) and when out of operating engagement with the first spindle (14) are stationary as compared with the flywheel mass shaft (45).
6. Rotary friction welding machine according to Claim 4 or 5, characterized in that  
at least one of the flywheel mass bodies is rigidly connected to the flywheel mass shaft, while the or every other flywheel mass body is rotatably mounted on said flywheel mass shaft in such a way that the or every flywheel mass body that is rotatably mounted on the flywheel mass shaft can be selectively coupled to and uncoupled from the or every flywheel mass body that is rigidly connected to the flywheel mass shaft.
7. Rotary friction welding machine according to Claim 1, characterized in that  
the flywheel mass bodies can be moved back and forth between two magazine halves such that the flywheel mass bodies are in operating engagement with the first spindle (14) in a position that is inserted into a first magazine half (51) and out of operating engagement with the first spindle (14) in a position that is inserted into a second magazine half (52).
8. Rotary friction welding machine according to Claim 7 characterized in that

the first magazine half (51) is rigidly connected to the first spindle (14) and the second magazine half (52) can be rotated as compared with the first spindle (14).

9. Rotary friction welding machine according to Claim 7 or 8, characterized in that  
the two magazine halves (51, 52) are embodied as a revolver magazine, wherein the two magazine halves (51, 52) have recesses (53) to accommodate the flywheel mass bodies.